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United States Environmental Protection Agency

Region V



77 West Jackson Boulevard
Chicago, Illinois 60604

Superfund Division

Facsimile Cover Sheet
Telephone Number
312-886-4071



To: HOLLY GREJDA / STEVE MANGION

Office phone: _____ Machine No: 317-308-3086
202 260 0106

From: SHERI BIANCHIN

Office phone: _____ Mail code: _____

Date: 6-10-96 Number of pages, including cover: 6

Message: Here are some thoughts re: Wells & Geology
Apparently Wells J K L & M & perimeters are at issue

Feel free to mark-up & fix ideas to me

Shu

US EPA RECORDS CENTER REGION 5



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Signature: _____

Justification for Upper Aquifer Monitoring Wells American Chemical Services, Inc.

Well No. 1

An additional monitoring well is suggested approximately 100 feet southeast of the midpoint between MW-13 and M-5S. The purpose for the well is to define the western extent of contamination in the upper aquifer in the wetland area. The well would confirm the limit of contamination as determined during the Geoprobe investigation. The distance between MW-13 and M-5S is over 1,000 feet, and MW-14, which is the closest monitoring well between these wells, is contaminated. Geoprobe samples analyzed by a field gas chromatograph can aid in the placement of monitoring wells; however, they cannot reliably rule out the need for a monitoring well. Reliable long-term monitoring will require a well in the recommended location.

Well No. 2

A well was suggested northwest of MW-13 to define the extent of contamination in the upper aquifer at this portion of the site. According to the December 1994 well sampling data, chloroethane at 770 ppb was detected in MW-13. Therefore, the extent of contamination is greater than was delineated during the Geoprobe investigation. This was a well that was a possible deferral pending the results of additional groundwater analyses from MW-13.

Well No. 3

A monitoring well is suggested near P-63. The purpose for the well is to define the nature of the contamination in the northern portion of the plume that was defined during the Geoprobe investigation. No monitoring wells exist to fulfill this purpose. This well may be located within the extraction trench as presented in the April 23 meeting; however, the well could be re-located north across the railroad tracks.

Well No. 4

This well was suggested to determine the nature of the acetone contamination detected north of the railroad tracks. It was discussed in the April 23 meeting that Well No. 4 could be shifted south of the benzene line and eliminate Well No. 3.

Well No. 5

This well was suggested to define the limit of the acetone contamination detected north of the railroad tracks.

Well No. 6

A monitoring well is suggested between P-58 and P-59 just outside the line where benzene was detected, as specified on Figure 5. This well will provide coverage of the area between MW-11 and MW-12, which are over 1,000 feet apart. The purpose for the well is to define the eastern extent of contamination in the upper aquifer in the area east of Colfax Avenue. The well would confirm the limit of contamination as determined during the Geoprobe investigation. No monitoring wells exist to fulfill this purpose.

Well No. 7

This well was suggested to define the extent of contamination east of MW-12, which contained a low benzene hit of 2 ppb during a previous sampling event. This well was a possible deferral pending results of analyses of additional samples collected during future sampling events.

Well No. 8

An additional monitoring well is suggested approximately 150 feet northeast of P-62, to provide adequate monitoring coverage of this area. The purpose for the well is to define the eastern extent of contamination in the upper aquifer in the area south of Reder Road. The well would confirm the limit of contamination as determined during the Geoprobe investigation. No monitoring wells exist to fulfill this purpose.

Well No. 9

An additional monitoring well is suggested approximately 500 feet south of P-62, to better define the nature of contamination within this area. The purpose for the well is to define the nature of the contamination in the southeastern portion of the plume that was defined during the Geoprobe investigation. No monitoring wells exist to fulfill this purpose.

Appt background

Upon review of the Pre-Design Work Plan, EPA questioned the completeness of data regarding groundwater hydrology and contaminant distribution at the ACS site. Specifically, it was not clear what was the nature and extent of groundwater contamination north, south, east, and west of the ACS site.

1. It must be re-emphasized that inferences about plume location based on head differences cannot be made the same way at a free phase site as they would be at a dissolved-phase only site.
2. *When review the pre-design plan,* According to the most recent groundwater sampling data, only one well (MW-18) was found to contain water at concentrations below the required cleanup levels. Also, these results are suspect, U.S. EPA did not conduct oversight of groundwater collection. The samples were collected with bailers, which is a method that U.S. EPA strongly disapproves of because it results in significant VOC losses. With only a single well outside the plume and sampling results based on a disapproved method, USEPA/IDEM questioned whether the data could be used to determine the nature and extent of groundwater contamination, as required in the Statement of Work.
3. The USEPA/IDEM did not have enough data to characterize the fate and transport of groundwater contamination. Before the 1995/96 upper aquifer investigation, available upper aquifer hydrogeologic data was limited to areas of known groundwater contamination. No piezometric data existed for the following areas:
 - North of the site, beyond the Grand Trunk railroad.
 - West of the site, beyond the wetlands.
 - East of the off-site containment area.
 - Southeast of the monitoring well MW-6 area.

Without this data, the fate and transport of groundwater contamination could not be adequately characterized.

At sites such as the ACS site, with significant quantities of dense, non-aqueous phase liquids (DNAPLs), *one likely* site hydrogeologic data alone is insufficient to characterize fate and transport mechanisms. The direction of the DNAPL movement depends less on the direction of groundwater flow and more on gravity forces, viscous forces, and the dip of underlying strata. Therefore, DNAPL movement may be contrary to the direction of groundwater flow. At the ACS site, the top of the clay layer underlying the On-Site Containment area (the major DNAPL area) is 622 feet above mean sea level (AMSL). However, east of Colfax Avenue, the top of the clay layer appears to dip 3 to 4 feet, to 618 to

619 feet AMSL. This may represent a potential eastward migration pathway.

The upper aquifer investigation was undertaken to ^{ful} these data gaps.

Respondents have previously agreed to the rationale being used for the work being conducted and the process to get there. Specifically, the Pre-Design Work Plan (August 21, 1995) pages 4-3 and 4-5 discusses the groundwater extent investigation. . . .

The fifth step is to determine the extent of groundwater contamination in the Upper Aquifer consistent with the approved Tracer investigation plan following the procedure described below. The extent of groundwater contamination will be delineated in the field using VOCs detected in groundwater samples collected from temporary sampling points as an indicator of the extent of contamination. Based upon available information, three upper aquifer wells are proposed at this time (MW-25, MW-26, and M@-27) at locations shown on Figure 4-2.

The proposed wells would be located at the limits of this previously identified VOC plume (non-detects of VOCs in the Tracer Investigation). In addition, the document states on page 4-4, In the cases of the wetlands...

pull from Workplan
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remedial action.

The Respondents fell that they are moving foreword in good faith attempt of the Perimeter Groundwater Containment System without agency approval.

EPA has sent out 2 letters approving of the design/build approach and authorizing Respondents to move forward in designing and building the PGCS. Using the date proposed by Respondents, EPA gave Respondents a date of December 31, 1996, to have the system operational and functional.

For the Barrier Wall, EPA sent out a letter approving of teh approach and giving a date of February 28, 1996.

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